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Investigation and Study of Vital Factors in Selection, Implementation and Satisfaction of ERP in Small and Medium Scale Industries

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ABSTRACT

Small and Medium Scale Enterprises in India are the most productive job designers and forerunners in developing new ideas in the field of business. SMEs not only play a vital role in providing large scale employment openings at reasonably lower capital than large businesses but also help in industrialization of rural areas in India. SMEs are complementary to large industries as subsidiary units and this sector contributes immensely to the socio-economic development of the country. Small and Medium scale industries have grown tremendously in the last 5 decades. In spite of high enthusiasm and intrinsic capabilities to grow, there are a number of problems faced by SME's; one of them is the 'technological obsolescence'. The SME sector in order to outcome this challenge must make advances in the field of engineering and technology. Adoption of Information Communication Technology in their business process can enhance their productivity and global competency.in the market. In this connection Enterprise Resource Planning plays a vital role in the SME's business process strategy. Hence there is a need for the motivation to implement ERP and find whether the current ICT solution the industries using are adequate for their strategy. In this paper we try to find out which ERP vendors does the SME sectors prefer, are the features of the ERP system and the implementation methodology selected have met the business goals and user satisfaction.

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1. INTRODUCTION

Small and medium scale industries are important for the growth and development of the nation's economic growth. Information Technology has become an integral part in any type of enterprise. Today, technology up gradation plays a crucial role in enhancing the competitiveness and in fostering the growth of SMEs. The business process is becoming complex day by day requiring more internal data flow for decision making, timely report generation, inventory management and resource management. In this regard, business managers need efficient information systems to handle the huge data flows and manage the information generated by the enterprise resulting in improvement in cost reduction, increased productivity and customer satisfaction. ERP is an integrated system which has the properties of the transaction processing to decision support system, everything in a single bowl. Compared to other information systems such as spreadsheet which have analytical tool which support decision making and Tally an accounting package, ERP offers an

integrated package where the managers can efficiently use it to improve internal communication, productivity and get a visually pleasing report for decision making.

Indian small and medium enterprises (SMEs) are looking to the cloud, analytics and mobile solutions to improve operations and become more efficient, according to a new research report by Circle Research, according to a press release issued by enterprise application software company SAP, which sponsored the research.

To sustain in the market and improve the productivity are forcing them to completely reconsider traditional business models and adopt cutting edge technologies like cloud and big data. Where these technologies help SMEs to achieve business success and fulfill their ambitions. In this paper we try to know how many SMEs have put into use ERP for their business and find it helpful for the working in their organization.

Kanishka Samudaya Nanayakkara et.al [1] work shows that there is a significant impact to the achievement of the ERP execution venture if ERP usage group comprises of high number of Early Adopters (or superior opinion leaders). Kanishka Samudaya Nanayakkara et.al [2] works on the construction organizations in Sri Lanka and sows that the influencing factor for implementation and success for an ERP is not only the IT factors but also non IT factors also influence in the selection. The factors were grouped into Major factors, Moderate factors and Minor factors. It is also has been observed in their work that Some of the factors that usually perceived as important in the selection stage are actually not significantly important in the ERP implementation process and its success [3]. According to the ERP report of 2015 one of the factors for implementing ERP was to replace the old ERP or legacy systems to new ERP systems. It is also reported that most of the manufacturing companies have implemented ERP the growth rate is increased from 27 percent to 43 percent. The success factors of the ERP implementation was less since the implementation took most of the time and were over budget. [4] According to the report by Panorama Consulting shows that the Titans of ERP vendors such as SAP, Oracle, Microsoft Dynamics or Infor ERP solutions, the study shows that SAP is the most commonly short-listed ERP system of the four. SAP is followed by Oracle, Microsoft and Infor. Ahmed J. Aljaaf et.al [5] their study shows that change management strategies' are important in adopting new system by the employees, which reduces staff resistance by clear and systematic implementation of ERP. With the support of top managers, feedback management and opportunities to change plays an important role in implementation of ERP. The study tells us that by practicing team approach and having champion teams, organizations would be capable of creating cooperation and thus strengthen application of enterprise resource management. H. Gupta et.al [6] enlisted three critical success factors to succeed in ERP implementation they are: Top Management responsible for the entire ERP implementation, Project Management which focuses on pre-implementation, implementation, post implementation phases and Change Management which plays a vital role in implementing ERP. These factors were evaluated using the Plan-Do-Check-Act evaluation method which evaluated each phase of implementation in the Project Management. Ewa Ziemba and Iwona Obłąk, [8] in their paper they explained the nature of business process management, especially in public administration in Poland. They grouped the factors into the following category namely:

a. Factors related to public procurement procedure;
b. Factors related to government processes management;
c. Factors related to project team competences (knowledge and skills of the project team related to implementation of information systems, especially erp systems in public administration); and
d. Factors related to the project management.

Among these the important factor is the public procurement procedure. Legal regulations in the public procurement procedure make the ERP implementation delay due to prolongation of the purchase and also the implementation time. In public administration, the scope of changes is quite extensive and mainly includes changes in government processes; hence the change management factor also affects the prolongation of the ERP implementation. An article by Daphne Rich and Jens Dibbern [9] has written the impacts of post implementation phase of ERP system. They have considered and adapted all the elements of the IS success models for the post implementation phase. It mainly tells about the variations in user satisfaction. The overall Usefulness of the ERP implementation lies on the End User Satisfaction (EUS).

H1: A higher degree of Usefulness leads to a higher degree of overall EUS.

P. T. Kale et al. [11] Vendors need to lengthen the ERP solution to better meet the requirements of SMEs. Since the financial resources of SMEs are limited, the cost of ERP system needs to be further reduced. SMEs on their part need to carefully evaluate their current IT systems and document its shortcomings. They discussed the issues and challenges of ERP implementation.

Bernhard Wieder et al. [12] in their research studied the performance indicators on financial and non-financial sectors when adopting ERP systems for their business domain. Using ERPS adoption, ERPS history and ERPS extension (with a SCMS) as independent variables and KPIs for supply chain performance and firm performance as dependent variables, they found that the higher the overall firm performance, but

again surprisingly not the supply chain performance. But extending the ERP System there was increase in the supply chain performance.

2. METHODOLOGY AND EXPERIMENT RESULTS

The main aim of our research is to determine the vital factors in selection, implementation and satisfaction of ERP. A survey was conducted in Small and Medium Scale Industries in and around South India. Data were gathered from the firms which have implemented and not implemented ERP systems. Sample sizes of 40 SMEs were selected by the method of simple random sampling. Data gathering tool in this study is a questionnaire that was prepared after examining relevant texts and related indexes were extracted. Only one survey questionnaire was sent to an ERP organization user. The respondents were manager, inventory manager, production manager and marketing executive. Since some of the SMEs did not return the questionnaire and some questionnaires were partially filled, we had to discard 12 questionnaires and finally the analysis was conducted for 28 companies only. To ensure that the inquiries that ought to be incorporated into the survey the past work of the researches were reviewed. Based on the factors the following hypothesis was constructed.

H1: Organizations efficiency and productivity improved by implementing ERP systems
H2: Big Bang methodology was used to implement ERP systems.
H3: Enhancing the current ERP system to match the current general strategies of the enterprise.
H4: The majority of the organizations go for vendors well known example SAP.

2.1. Benefits

ERP systems are used to provide the same updated and accurate information across different functions is what makes the application so valuable to enterprises. The advantage of these systems is the same information is viewed by all the people in different departments. The ERP system forwards this updated and accurate information to the next concerned department, which is defined in the workflow. Apart from the low cost ownership the implementation of ERP systems gives more advantage to the organization like increased productivity, reduced operational cost, improved internal communication and improved customer service and order fulfillment as shown in the Figure 1. The Hypothesis H1: Organizations efficiency and productivity improved by implementing ERP systems is true. Table 1 show the frequency distribution for benefits in ERP System implementation.

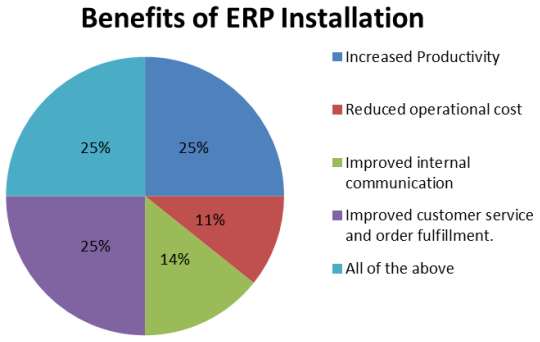

Figure 1. Benefits found by the organizations by implementing ERP Systems

Table 1. Frequency distribution for benefits in ERP System implementation

	Benefits				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Improved Customer service and order fulfillment	7	25.0	25.0	25.0
	Improved Productivity	7	25.0	25.0	50.0
	Improved internal communication	4	14.3	14.3	64.3
	Reduced operational cost	3	10.7	10.7	75.0
	All of the above	7	25.0	25.0	100.0
	Total	28	100.0	100.0	

2.2. Implementation Approach

When a new system needs to be implemented in an organization there are many ways they can implement. The different ways are:

Big Bang approach where all the modules of the system are implemented together and the go live date for all the sections/departments will be the same. In phased approach the adaptation happens in sequential manner, in parallel approach the old and new system will be alive for some time until the end users become acquainted to the new system. Hybrid approach combines both phased and parallel approach. According to our study, most of the organizations used Big Bang approach to implement the ERP system. The frequency of these approaches is shown in the Table 2 below. Hence the Hypothesis H2: Big Bang methodology was used to implement ERP systems is true.

Table 2. Frequency distribution for Methodology

	Methodology	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Big Bang	9	32.1	32.1	32.1
	Phased	8	28.6	28.6	60.7
	Parallel	7	25.0	25.0	85.7
	Hybrid	4	14.3	14.3	100.0
	Total	28	100.0	100.0	

2.3. Vendors

Vendors are people who develop ERP packages. They are the people who invested huge amount of money, time and effort in research and development of ERP solutions. There are many vendors in the marketplace; selection of the right ERP vendor contributes to the success of the ERP implementation. The bigger vendor does not always mean better. The reasons for opting bigger ones are financial stability, longevity and various spectrums of offerings. Small vendors that are not known may carry increased risks in the area of long term longevity, but they provide better solution in a spectrum of industries. Table 3 shows that SAP is a leading ERP player in the ERP market. Many of the small scale industries in and around South India prefer SAP with 53.6%, hence H4 is true.

Table 3. Frequency distribution for Vendors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SAP	15	53.6	53.6	53.6
	PEOPLESOFT	3	10.7	10.7	64.3
	Oracle	2	7.1	7.1	71.4
	Tally	5	17.9	17.9	89.3
	Others	3	10.7	10.7	100.0
	Total	28	100.0	100.0	

2.4. Organizational Fit

Most of the Small scale enterprises implement Enterprise Resource Planning (ERP) systems as a base strategy to integrate all of their data and bring their organization into a joint system. The selected ERP has to fit the organization with some contingency factors such as strategy, structure, process, technology, environment, etc. to make sure that the Information System and the ERP system will much fit the requirement of enterprise general process. Paired samples t test has been used to analyze the correlation between vendor selected and the benefits derived. This test analysis indicates that for all the 28 organizations used in the sample, most of them prefer the vendor due to the benefits derived from them. Since the correlation value is .326, it is found that the organizations which are using SAP as their vendor has derived maximum benefits as shown in Table 3 and Table 4. Therefore the hypothesis H3 is also true.

Table 4. Paired Sample T Test

Paired Samples Statistics

		Correlation	Sig.	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Vendor	.326	.091	2.21	28	1.524	.288
	Benefits			2.86		1.557	.294

Table 5. Paired Sample T Test

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Vendor Benefits	-.643	1.789	.338	-1.337	.051	-1.901	27	.068

3. CONCLUSION

This study aims to improve understanding of critical factors affecting ERP implementation success in South India. As indicated by our study, at present we found that SAP is the real driving Vendor in India. ERP frameworks executed by SME parts have discovered advantages like increment in efficiency, improvement in order fulfillment and interior correspondence additionally expanded because of joint framework and real diminishment in operational expense was watched. The research result shows that organizational fit of ERP impacts execution achievement when the choice of ERP depends on upon comprehended ERP dealers.

However, because of the little sample size in the review, there are a few confinements in the speculation of the examination results to a bigger population. Meanwhile, ERP execution is not a transient errand persevering only a couple of months, but a long-term program which may last for one or several years. Factors affecting ERP implementation are complex and abundant, thus many researchers conduct case study only to find out some specific problems with ERP implementation. Undoubtedly, detailed case study is a powerful tool to solicit important issues disregarding to its disadvantage of generalization problems. Along these lines, contextual investigation and an expansive study would be a perfect technique to specialists in the ERP field.

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